No. 200500021

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Trigen Seed LLC

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) MAY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Banton'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this seventeenth day of March, in the year two thousand and six.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
Trigen Seed LLC

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
01M96

3. VARIETY NAME
Banton

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
8024 Telegraph Road
Bloomington, MN 55438-1178

5. TELEPHONE *(include area code)*
952-829-7740

6. FAX *(include area code)*
952-829-8020

FOR OFFICIAL USE ONLY

PVPO NUMBER
200500021

FILING DATE
NOVEMBER 18, 2004

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Corporation

8. IF INCORPORATED, GIVE STATE OF INCORPORATION
Minnesota

9. DATE OF INCORPORATION
Feb. 7, 1995

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Dr. Robert W. Romig
Trigen Seed LLC
8024 Telegraph Road
Bloomington, MN 55438-1178

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 3,652.00
DATE 11/18/04

CERTIFICATION FEE:
$ 768.00
DATE 3/07/2006

11. TELEPHONE *(include area code)*
952-829-7740

12. FAX *(include area code)*
952-829-8020

13. E-MAIL
bobromig@mn.rr.com

14. CROP KIND *(Common Name)*
Wheat

15. GENUS AND SPECIES NAME OF CROP
Triticum aestivum L.

16. FAMILY NAME *(Botanical)*
Gramineae

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☒ NO

18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of Variety
d. ☒ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☒ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☒ Filing and Examination Fee ($3,652), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *See Section 83(a) of the Plant Variety Protection Act)*
☒ YES *(If "yes", answer items 20 and 21 below)* ☐ NO *(If "no", go to item 2*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? ☒ YES ☐ NO

IF YES, WHICH CLASSES? ☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☒ NO

IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

(If additional explanation is necessary, please use the space indicated on the reverse.)

22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?

☒ YES ☐ NO

IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?

☐ YES ☒ NO

IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, and for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER
Robert W. Romig

NAME *(Please print or type)*
Dr. Robert W. Romig

CAPACITY OR TITLE
Chief Manager

DATE
November 12, 2004

SIGNATURE OF OWNER

NAME *(Please print or type)*

CAPACITY OR TITLE

DATE

TT-470 (02-10-2003) designed by the Plant Variety Protection Office using Word 2000. Replaces former version of TT-470, which is obsolete.

2005 0021

variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable *(in the sense tha will reproduce an entire plant)* tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for $3,652 ($432 filing fee and $3,220 examination fee), payable to "Treasurer of the United States" *(See Section 97.6 of the Regulations and Rules of Practice.)* Partial applicatio will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking material to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of $432 for issuan of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office
Telephone: (301) 504-5518
FAX: (301) 504-5291
Homepage: http://www.ams.usda.gov/science/pvpo/pvp.htm

ITEM

18a. Give:
(1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified

18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:

(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.

18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.

18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, *etc.*

18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.

19. If "Yes" is specified *(seed of this variety be sold by variety name only, as a class of certified seed)*, the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. *(See Regulations and Rules of Practice, Section 97.103).*

22. *See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.*

23. *See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.*

21. CONTINUED FROM FRONT *(Please provide a statement as to the limitation and sequence of generations that may be certified.)*

22. CONTINUED FROM FRONT *(Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)*

The first sale of Banton Wheat occurred on April 26, 2004 to Doug Peterson of East Grand Forks, MN

23. CONTINUED FROM FRONT *(Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)*

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignmer or any modification of owner's name is specified in Section 97.175 of the regulations. *(See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)*

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089. http://www.ams.usda.gov/lsg/seed.htm

Exhibit A
Origin and Breeding History of the Variety

'Banton' hard red spring wheat (Triticum aestivum L.) is derived from a cross Buck 1021/SBE 0050 made in our crossing block at the Pirque Experiment Station of the Catholic University in Chile during the 1994-95 growing season. We received seed of Line B 1021 from Buck Semillas, S.A. in Argentina for evaluation in our exchange program with them. They subsequently released Line B 1021 in 1995 in Argentina as the variety 'Buck Antorcha'. The University of Minnesota wheat program provided us with seed of SBE 0050, which was derived from a cross W 8814/Norak, made by Pioneer Hi-Bred International, Inc. The Minnesota Agricultural Experiment Station and the USDA released this line as variety 'HJ 98' in 1998. Thus the genealogy of 'Banton' is Buck Antorcha/HJ 98.

We grew the F_1 row from the cross in our Yuma, Arizona nursery in the 1995-96 growing season and as an F_2 bulk population in Yuma during the 1996-97 growing season. We subsequently advanced bulk populations from the F_3 to F_6 as follows:

- F_3 at Yuma, Arizona in 1997-98,
- F_4 at Warren, Minnesota in 1998,
- F_5 at Lytle, Texas in 1998-99,
- F_6 at Warren, Minnesota in 1999.

We eliminated lighter kernels in the F_3 to F_6 seed populations by means of an air separation process.

We harvested individual heads in the F_6 selecting for shorter stature and head fertility, to produce individual F_7 head-rows in Yuma, Arizona in the 1999-2000 season. We advanced the F_8 seed from these individual head-rows to a preliminary performance trial grown at Warren, Minnesota in 2000. Selection 1M proved to be the best performing line of the lot.

We then grew a small increase plot in Yuma in the 2000-01 growing season with F_9 seed harvested from the yield trial plot of selection –1M. The plot was rogued for off-type plants at two stages. We designated this seed as Lot 01YSP 11. It has the pedigree 306S-0A-0A-0M-0T-1M-0A.

We subsequently made a further increase of the line at Warren, Minnesota in 2001 with seed from Lot 01YSP 11. We harvested this with a Hege plot combine.

We entered the line in the 2002 and 2003 Uniform Regional Spring Wheat Performance nursery with the designation 01M 96. It also entered the Wheat Quality Council plots for milling and baking evaluation in 2003.

Exhibit A
Origin and Breeding History of Banton (Cont'd)

Evidence of Uniformity and Stability (Amended)

'Banton' is a semi dwarf variety derived from seed from a single F_8 head (F_9 seed). We rogued production of Breeder seed to insure uniformity.

'Banton' has met Foundation class requirements for three consecutive years of Foundation to Foundation to Foundation production in Minnesota and for one year in North Dakota from the second cycle of Minnesota Foundation production without any intervening roguing. On this basis we consider "Banton' to be a stable variety.

We have maintained the variety by a head-row purification process with follow up roguing. We limit commercial Foundation seed production from Foundation seed to one cycle.

Type and frequency of variants during reproduction and multiplication (Amended)

We have observed taller and later off-type during increases in Arizona and in Minnesota. The expression of these seems to be environment dependent on location and year. The highest frequency rate is in the order 1:20,000, which coincides with the mutation rate reported in the literature for semi-dwarf wheat.

We subjected the F_3 to F_6 bulk seed populations to selection for denser seed by means of an air density separation process. Subsequently, we selected heads from shorter stature plants in the F_6 population at Warren, Minnesota in 1999. We planted this F_7 seed in individual head-rows at Yuma, Arizona in the 1999-2000 season. We advanced the F_8 seed from these rows to preliminary trial plots grown at Warren, Minnesota in 2000. Selection 1M subsequently became 'Banton'. Consequently, 'Banton" is derived from the F_8 population originating from a single head.

Exhibit B
Statement of Distinction

'Banton' is most similar to HJ 98 but differs in that it is resistant to leaf rust, *Puccinia recondite* Rob. ex Desm. (Exhibit D, Table 3) whereas HJ 98 is moderately susceptible, as documented on appended Page 43 from University of Minnesota Variety Trial Results MP 110-2004, January 2004 showing spring wheat disease reactions.

Banton has excellent straw strength, as evidenced by its lodging score performance in the 2002 and 2003 Uniform Regional Spring Wheat Performance Nurseries. On a scale of 0 to 9, with 0 being no lodging, Banton had an average note of 0.4 at nine locations in 2002 and 0.4 at six locations in 2003. HJ 98, on the other hand, is rated as having medium straw strength, as shown in the appended page 42 from the University of Minnesota Variety Trial Results MP 110-2004, January 2004 showing hard red spring wheat varietal characteristics.

Banton has the high molecular weight glutenin sub-units 2*, 7+9, and 5+10 compared with 1, 7+9, and 5+10 for HJ 98, as shown on the appended PAGE patterns.

HARD RED SPRING WHEAT

Spring wheat varieties are compared in trial plots at Waseca, Lamberton, Morris, Crookston, Stephen, Roseau and St. Paul. Wheat varieties are grown in replicated plots at each location. These plots are handled so that the factors affecting yield and other characteristics are as nearly the same for all varieties at each location as possible. These hard red spring wheat trials are not designed for crop (species) comparisons, because the various crops are grown on different fields or with different management. The data should only be used to compare varieties within a table.

Tested hard red spring wheat varieties are listed in the order of their flowering date in the tables and year of release within variety categories. Only new varieties or those varieties with better than susceptible reaction to scab are being tested.

Variety Selection Criteria

Although all data presented should be considered when choosing wheat varieties, the scab epidemics in the hard red spring wheat growing areas of the state have demonstrated the clear need to give greater weight to selecting varieties for their tolerance to this devastating disease. Scab evaluations include *disease severity*, based on visual spread of the disease on the spike, and *grain soundness*, which reflects the variety's ability to maintain plump, sound kernels. These ratings should be considered together to reduce risk of loss. The use of more than one variety to provide different days to

Characteristics of hard red spring wheat varieties.

Variety	Days to Heading[1]	Height, Inches[1]	Straw Strength[2]	Test Weight (Lb/Bu) 2003	Test Weight (Lb/Bu) 2-year	Protein (%)[3] 2003	Protein (%)[3] 2-year	Baking Quality[4]	Pre-Harvest Sprouting
Ingot	63	38	Medium	64.2	62.4	15.2	15.1	Medium-High	Susceptible
Briggs	63	35	Medium	62.7	61.0	14.7	14.9	–	–
Oklee	64	32	Medium	63.4	61.7	15.3	15.2	Low-Medium	Resistant
Walworth	65	34	Medium	61.7	59.8	15.0	15.0	Medium-High	Resistant
Dapps	65	37	Medium	61.8	–	16.5	–	–	Resistant
Oxen	65	32	M. Strong	61.9	59.7	14.7	14.8	High-Medium	Resistant
Alsen	66	33	Strong	62.7	61.3	15.3	15.6	High	Resistant
Reeder	66	34	Strong	62.3	60.5	14.9	14.8	Medium-High	Resistant
Knudson	66	32	M. strong	62.3	60.7	14.0	14.4	Medium-High	Resistant
Mercury	66	29	Strong	61.8	59.8	14.3	14.5	Medium	Mod. Susceptible
Parshall	66	39	Strong	63.4	61.9	15.1	15.2	High-Medium	Resistant
Russ	66	36	M. Strong	62.1	59.7	14.1	14.4	High-Medium	Resistant
Hanna	66	38	M. Strong	61.9	60.4	14.6	14.9	High	Resistant
2375	67	32	Medium	62.2	60.4	14.9	14.9	Medium	Resistant
Dandy	67	36	V. Strong	63.2	61.5	14.3	14.5	Low	Mod. Susceptible
HJ98	67	32	Medium	61.8	59.8	14.3	14.5	Medium-Low	Resistant
NorPro	68	31	Strong	61.6	59.8	14.5	14.7	Medium	Resistant
Verde	68	32	M. Strong	61.6	59.8	13.9	14.3	Low-Medium	Resistant
Granite	69	33	V. Strong	63.7	62.2	15.3	15.4	–	Resistant
Ivan	69	31	V. Strong	61.2	60.0	13.2	13.7	Low	Resistant
Marshall	69	31	Strong	61.7	59.6	13.5	13.8	Low	Resistant
Mean	66	34	–	62.5	60.7	14.8	14.8		
LSD	1	1	–	0.6	0.6	0.5	0.4		

[1] 2003 data. [2] 2000-2003 data. [3] 12% moisture basis. [4] 2001 & 2002 crop.

MINNESOTA VARIETAL TRIAL RESULTS
MP 110 - 2004 JANUARY 2004
UNIVERSITY OF MINNESOTA

7

Disease reactions of hard red spring wheat varieties.

Variety	Leaf Rust [1]	Stem Rust [1]	Other Leaf Diseases [1]	Scab	
				Disease Severity [1]	Grain Soundness [2]
Ingot	MS	R	MS	MR-MS	2.0
Briggs	MR-MS	R	MR	MR-MS	3.0
Oklee	MS	R	MR	MR-MS	2.5
Walworth	MS	R	MS	MR-MS	2.5
Dapps	MR	R	MR-R	–	–
Oxen	MS	R	MS	MS-S	3.0
Alsen	MR	R	MR-R	MR	2.0
Reeder	MS	R	MR-R	MS	3.5
Knudson	R	R	MR-R	MR-MS	2.5
Mercury	MS	R	MR	S	5.0
Parshall	MS	R	MR-R	MR-MS	2.0
Russ	MS	R	MS	MR-MS	3.0
Hanna	MS	R	MR	MR	2.0
2375	MS	R	S	MR-MS	2.5
Dandy	MS	R	MR	MS	3.5
HJ98	MS	R	MS	MS	3.0
NorPro	MR	R	MR-R	MS	3.5
Verde	MR-MS	R	MR-R	MS	3.5
Granite	MS	R	MR	MR-MS	2.5
Ivan	R	R	MR-R	MS-S	4.0
Marshall	MS	R	MS	MS	3.5

[1] R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible.
[2] Ability to maintain plump, sound kernels under scab epidemics: 1=good, 5=poor.

heading and use of different seeding dates is highly recommended to reduce risk. Variety descriptions do not provide information on scab resistance. Table information should be used.

General Purpose Varieties

Oklee – Awned, early-midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Medium yield and high test weight. Medium straw strength and high protein percent. Released by Minn. AES and USDA-ARS in 2003. PVP (pending)

Hanna – Awned, midseason maturity, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Low to medium yield and medium test weight. Moderately strong straw. Medium to high protein percent. Released by AgriPro in 2001. PVP (94)

Knudson – Awned, midseason-late maturity, semidwarf. Resistant to stem rust and to leaf rust. Moderately resistant to other leaf diseases. High yield and medium test weight. Moderately strong straw. Medium protein percent. Released by AgriPro in 2001. PVP (94)

NorPro – Awned, midseason-late maturity, semidwarf. Resistant to stem rust and moderately resistant to leaf rust. Moderately resistant to other leaf diseases. Medium to high yield and low to medium test weight. Strong straw. Medium protein percent. Released by AgriPro in 1999. PVP (94)

Parshall – Awned, midseason maturity, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Low to medium yield and high test weight. Strong straw. High protein percent. Released by N.D. AES in 1999. PVP (94)

Reeder – Awned, midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Medium to high yield and medium test weight. Strong straw. Medium protein percent. Released by N.D. AES in 1999. PVP (94)

HJ98 – Awned, midseason-late maturity, semidwarf. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. High yield and low to medium test weight. Medium straw strength. Medium protein percent. Released by Minn. AES and USDA-ARS in 1998. PVP (94)

Ingot – Awned, early, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Low to medium yield and high test weight. Moderately strong straw. Medium to high protein percent. Released by S.D. AES in 1998. PVP (94)

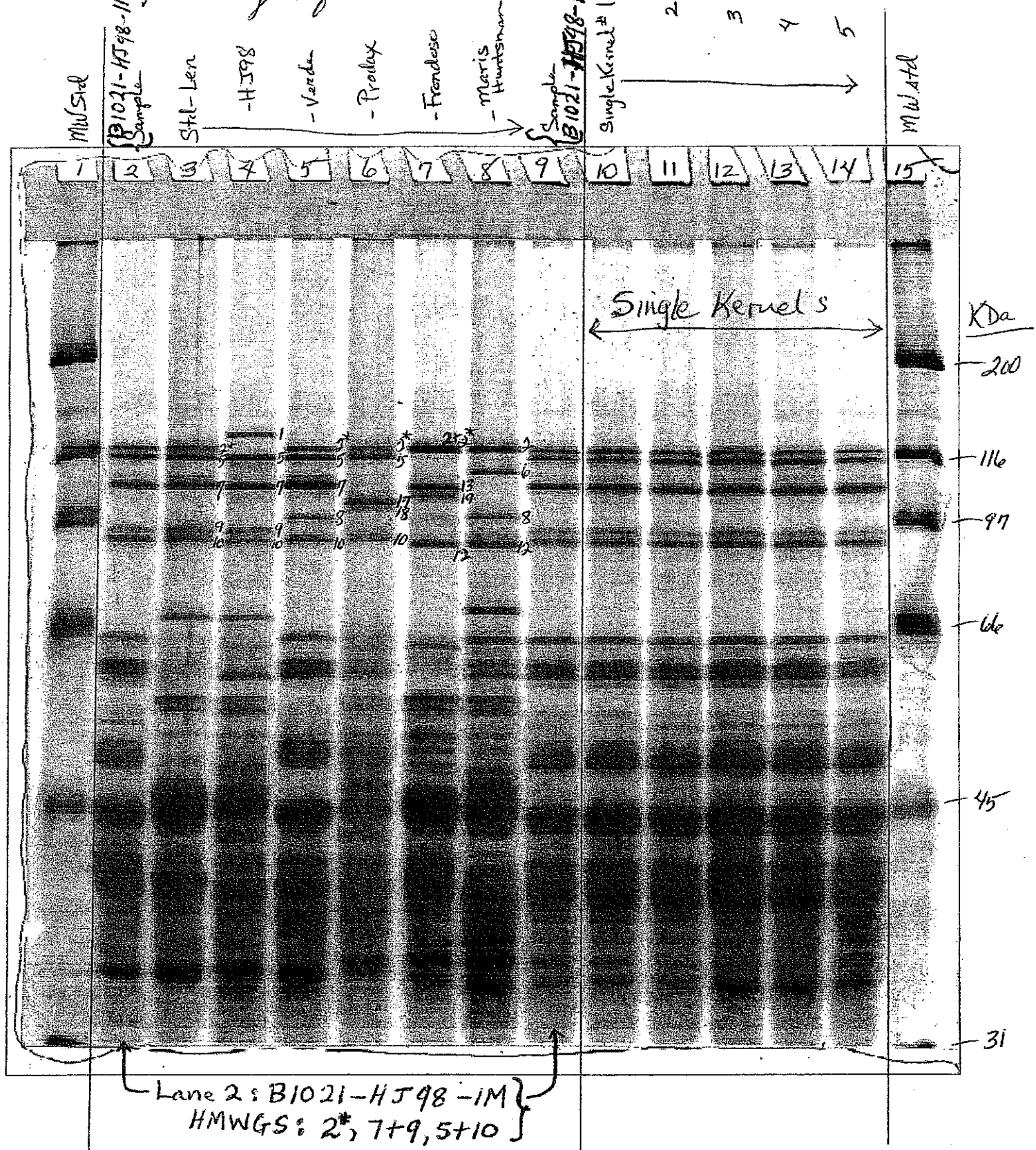
Ivan – Awned, late maturity, semidwarf. Resistant to stem rust and to leaf rust. Moderately resistant to other leaf diseases. Medium to high yield and medium test weight. Very strong straw. Low to medium protein percent. Released by AgriPro in 1998. PVP (94)

Mercury – Awned, midseason maturity, semidwarf. Resistant to stem rust. Moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. High yield and low to medium test weight. Strong straw. Medium protein percent. Released by NorthStar Genetics in 1997.

Oxen – Awned, early-midseason, semidwarf. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. High yield and low to medium test weight. Moderately strong straw. Medium protein percent. Released by S.D. AES in 1996. PVP (94)

Russ – Awned, early-midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Medium yield and low to medium test weight. Moderately strong straw. Medium to low protein percent. Released by S.D. AES in 1995. PVP (94)

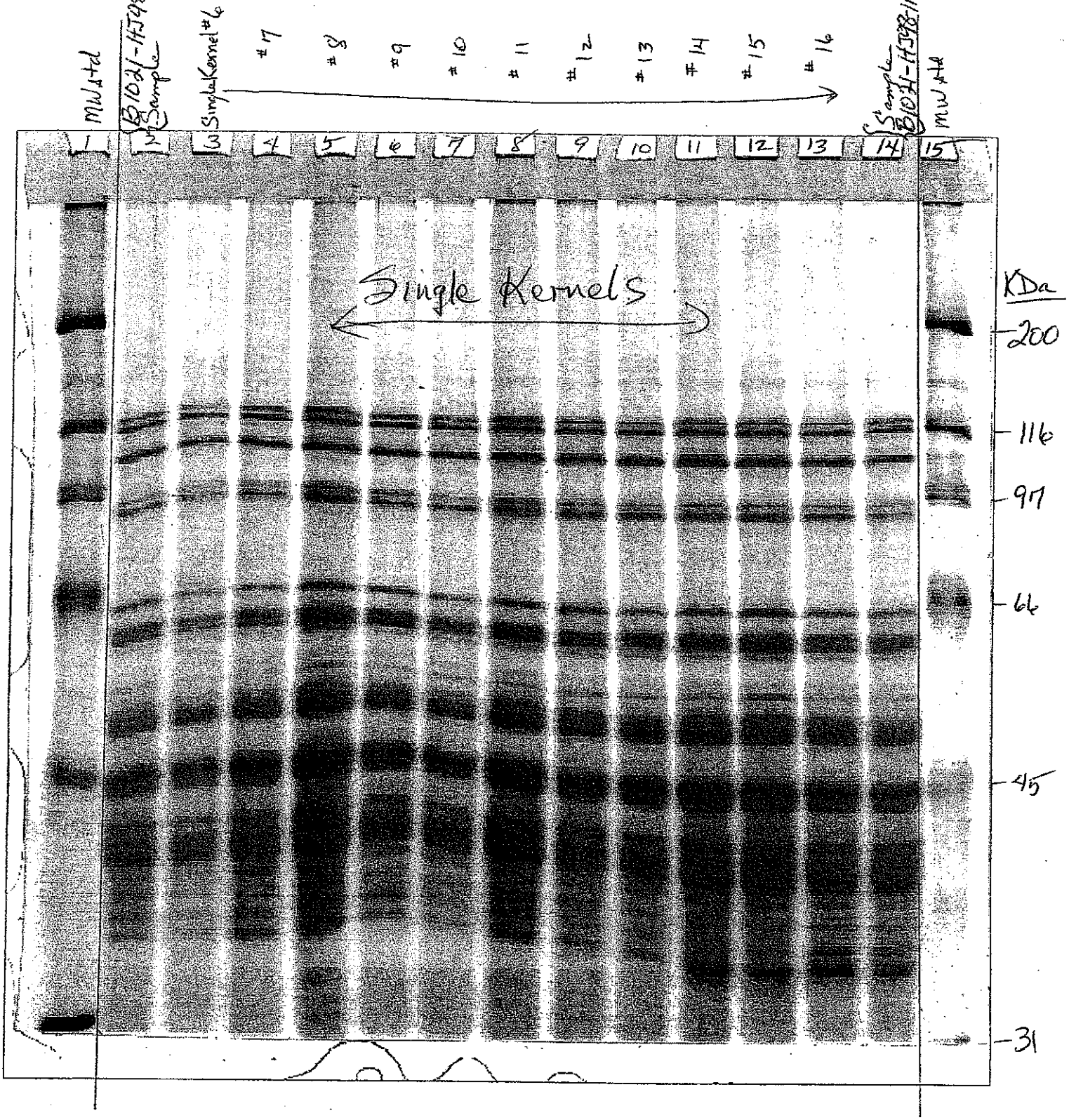
- 0.75mm, 12% acrylamide
- sample analysis for trisken seed LLC



Extraction = 50. mg ground sample (or single kernel crushed) / 1. ml reducing sample buffer at 50°C ~2hr, 95°C ~5min, cool, centrifuge. Load 5µl on gel lanes. 9

Stain CBB-G

-0.75 mm, 12% acrylamide
-Sample analysis for Triticum Seed LLC — B1021/HJ98-1M, 01YSP11



Extrn = 50 mg ground sample (or single kernel crushed) / 1 ml reducing sample buffer at 50°C ~ 2hr, 95°C 5 min, cool, centrifuge. Load 5µl on gel lanes.
Stain CBB-G

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 058

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT
(Whe

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)

TRIGEN SEED LLC

ADDRESS (*Street and No. or RD No., City, State, and Zip Code*)

8024 Telegraph Road
Bloomington, MN 55438-1178

FOR OFFICIAL USE ONLY

PVPO NUMBER 200500021

VARIETY NAME

Banton

TEMPORARY OR EXPERIMENTAL DESIGNATION

01M96

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. [0][9][9] or [0][9]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Royal Horticultural Society

Please answer all questions for your variety; lack of response may delay progress of your application

1. KIND:

[1]

1=Common
2=Durum
3=Club
4=Other (SPECIFY) : _____

2. VERNALIZATION:

[1]

1=Spring
2=Winter
3=Other (SPECIFY) : _____

3. COLEOPTILE ANTHOCYANIN:

[1] 1 = Absent 2 = Present

4. JUVENILE PLANT GROWTH:

[3] 1 = Prostrate 2 = Semi-erect 3 = Erect

5. PLANT COLOR (boot stage):

[2]

1 = Yellow-Green
2 = Green
3 = Blue-Green

6. FLAG LEAF (boot stage):

[1] 1 = Erect
2 = Recurved

[1] 1 = Not Twisted
2 = Twisted

[1] 1 = Wax Absent
2 = Wax Present

7. EAR EMERGENCE:

[0][5][7] Number of Days (Average)

[0][3] Number of Days Earlier Than KEENE *

Same as _____ *

[ ][ ] Number of Days Later Than _____ *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Tr

200500021

8. ANTHER COLOR:

[1] 1 = Yellow
2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

[0][7][5] cm (Average)

[0][3] cm Taller Than VERDE *

Same as _____ *

[1][1] cm Shorter Than KEENE *

10. STEM:

A. ANTHOCYANIN

[1] 1= Absent
2 = Present

B. WAXY BLOOM

[1] 1 = Absent
2 = Present

C. HAIRINESS
(last internode of rachis)

[1] 1 = Absent
2 = Present

D. INTERNODE

[1] 1 = Hollow 2 = Semi-solid 3 = Solid

[3] Number of Nodes

E. PEDUNCLE

[1] 1 = Erect 2 = Recurved 3 = Semi-erect

[3][6] cm Length

F. AURICLE

[1] Anthocyanin 1 = Absent 2 = Present

[ ] Hair 1 = Absent 2 = Present

11. HEAD (at Maturity):

A. DENSITY

[1] 1 = Lax
2 = Middense (Laxidense)
3 = Dense

B. SHAPE

[2] 1 = Tapering
2 = Strap
3 = Clavate
4 = Other (SPECIFY):_____

C. CURVATURE

[1] 1 = Erect
2 = Inclined
3 = Recurved

D. AWNEDNESS

[4] 1 = Awnless
2 = Apically Awnletted
3 = Awnletted
4 = Awned

12. GLUMES (at Maturity):

200500021

A. COLOR

[1]
1 = White
2 = Tan
3 = Other (SPECIFY) : _____

B. SHOULDER

[5]
1 = Wanting 2 = Oblique
3 = Rounded 4 = Square
5 = Elevated 6 = Apiculate
7 = Other (SPECIFY): _____

C. SHOULDER WIDTH

[1]
1 = Narrow
2 = Medium
3 = Wide

D. BEAK

[3]
1 = Obtuse
2 = Acute
3 = Acuminate

E. BEAK WIDTH

[2]
1 = Narrow
2 = Medium
3 = Wide

F. GLUME LENGTH

[1]
1 = Short (ca. 7mm)
2 = Medium (ca. 8mm)
3 = Long (ca. 9mm)

G. WIDTH

[3]
1 = Narrow (ca. 3mm)
2 = Medium (ca. 3.5mm)
3 = Wide (ca. 4mm)

---

13. SEED

A. SHAPE

[2]
1 = Ovate
2 = Oval
3 = Elliptical

B. CHEEK

[1]
1 = Rounded
2 = Angular

C. BRUSH

[1]
1 = Short
2 = Medium
3 = Long

[1]
1 = Not Collared
2 = Collared

D. CREASE

[1]
1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

[2]
1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

E. COLOR

[3]
1 = White
2 = Amber
3 = Red
4 = Other (SPECIFY): _____

F. TEXTURE

[1]
1 = Hard
2 = Soft
3 = Other (SPECIFY): _____

G. PHENOL REACTION (*see instructions*):

[4]
1 = Ivory
2 = Fawn
3 = Light Brown
4 = Dark Brown
5 = Black

H. SEED WEIGHT

[3][1] g/1000 seed (Whole number only)

I. GERM SIZE

[3]
1 = Small
2 = Midsize
3 = Large

14. Disease : (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED 20050002

[2]	Stem Rust *(Puccinia graminis* f. sp. *tritici)*	[2]	Leaf Rust *(Puccinia recondita* f. sp. *tritici)*
[2]	Stripe Rust *(Puccinia striiformis)*	[0]	Loose Smut *(Ustilago tritici)*
[3]	Tan Spot *(Pyrenophora tritici-repentis)*	[0]	Flag Smut *(Urocystis agropyri)*
[0]	Halo Spot *(Selenophoma donacis)*	[0]	Common Bunt *(Tilletia tritici* or *T. laevis)*
[0]	*Septoria nodorum* (Glume Blotch)	[0]	Dwarf Bunt *(Tilletia controversa)*
[0]	*Septoria avenae* (Speckled Leaf Disease)	[0]	Karnal Bunt *(Tilletia indica)*
[0]	*Septoria tritici* (Speckled Leaf Blotch)	[0]	Powdery Mildew *(Erysiphe graminis* f. sp. *tritici)*
[3]	Scab (*Fusarium* spp.)	[0]	"Snow Molds"
[0]	"Black Point" (Kernel Smudge)	[0]	Common Root Rot *(Fusarium, Cochliobolus* and *Bipolaris* spp.*)*
[0]	Barley Yellow Dwarf Virus (BYDV)	[0]	Rhizoctonia Root Rot *(Rhizoctonia solani)*
[0]	Soilborne Mosaic Virus (SBMV)	[0]	Black Chaff *(Xanthomonas campestris* pv. *translucens)*
[0]	Wheat Yellow (Spindle Streak) Mosaic Virus	[0]	Bacterial Leaf Blight *(Pseudomonas syringae* pv. *syringae)*
[0]	Wheat Streak Mosaic Virus (WSMV)	[ ]	Other (SPECIFY) _____
[ ]	Other (SPECIFY) _____	[ ]	Other (SPECIFY) _____
[ ]	Other (SPECIFY) _____	[ ]	Other (SPECIFY) _____
[ ]	Other (SPECIFY) _____	[ ]	Other (SPECIFY) _____

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

[0]	Hessian Fly *(Mayetiola destructor)*	[ ]	Other (SPECIFY) _____
[1]	Stem Sawfly *(Cephus* spp.)	[ ]	Other (SPECIFY) _____
[0]	Cereal Leaf Beetle *(Oulema melanopa)*	[ ]	Other (SPECIFY) _____
[0]	Russian Aphid *(Diuraphis noxia)*	[ ]	Other (SPECIFY) _____

15. INSECT: Continued (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

200500021

[0]	Greenbug *(Schizaphis graminum)*	[ ]	Other (SPECIFY) _____
[0]	Aphids	[ ]	Other (SPECIFY) _____

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

Item 7. Ear emergence of 57 days is the average of 56 days at 14 locations in 2002 and of 58 days at 16 locations in 2003. In 2004, ear emergence ranged from 44 days at Williston, ND to 68 days at Lund, WA and Hettinger, ND. In 2003, ear emergence ranged from 53 days at Prospor and Langdon, ND to 71 days at Brookings and Groton, SD.

Item 8. Plant color is The Royal Horticultural Society #137A

Item 12. Glumes are glabrous

Exhibit D
Additional Description of the Variety

Characteristics

'Banton' is a semi-dwarf, hard red spring wheat with white glumes, and an erect to curved head at maturity with mid-long awns. It has hollow stem-internodes. It is distinguished by strong straw and bright finish at maturity. The stem has no waxy bloom or anthocyanin. The last rachis node is not hairy. It resists shattering but threshes easily. The relative maturity is similar to that of 'Walworth'.

The grain has excellent test weight and good protein (Table 1). The milling and baking quality are acceptable (Table 2). The farinograph curve shown in Figure 2 indicates 'Banton' has strong gluten. The variety has the high molecular weight glutenin subunits (HMWGS) 2*, 7+9, and 5+10. Patterns from 18 single seeds suggest the variety may be uniform for this characteristic.

We have noted taller variants of about 1 per 20,000 plants, which is somewhat characteristic of semi-dwarf varieties.

Disease and Insect Resistance

'Banton' is resistant to leaf rust (*Puccinia recondite* Rob. ex Desm.) and to stem rust (*P. graminis,* f.sp. *tritici* Erikss. and Henn.) as shown below in tables 3 and 4, respectively.

Table 3. Adult Plant Reactions to Leaf- and stem Rust in 2002.

Location	Reaction to-	
	Leaf Rust	Stem Rust
St. Paul, MN	5R	10R
Fargo, ND	5R-tMR	
Carrington, ND	10R-tMR	
Langdon, ND	5R	

Table 1. Data for line B1021/HJ 98 sel 1M in the 2002 UniformRegional Spring Wheat Performance Nursery.

Trait	Location-																	
	Boze	Glenlea	Lang	Crook	Powell	St. Paul	Carr	Minot	Swift Curr	Will	Groton	Brook	Morris	Prosp	Pull	Selby	Hettin	Mean
Yield bu/a	63.5	59.1	58.2	61.5	62.0	44.0	43.7	43.0	39.9	34.0	30.1	37.0	28.8	27.9	28.0	23.8	23.9	41.7
Test Wt lb/bu	62.8	60.4	61.3	60.1	62.8	58.1	63.9	62.2	60.6	61.0	56.9	54.1	58.4	57.2	61.5	60.9	60.5	60.2
Head Fr May 31	30.0		30.7	33.0	27.3	27.7	26.3	58.7		32.7	21.3	17.7	24.0	49.0	16.0	22.0		27.8
Height cm	90.2	75.3	84.3	75.0	66.0	83.7	63.7	58.3	71.3	54.0	58.0	73.3	66.0	84.3	61.0	61.3	22.0	62.2
Lodging (1-9)		1.3	0.0	0.0		0.0	0.0				1.7	1.3	1.0			1.0		0.4
Protein %	14.1		14.1	13.6		15.4	14.8	14.5	12.4	16.6	16.8	15.7	15.7	14.6	15.7	16.0	17.6	15.2
1,000kw	33.1	33.3	36.6	31.6		31.1	30.2	36.5	27.7	25.1	33.6	30.6	31.3	25.6	29.8	39.2	24.9	31.3

BRABENDER INSTRUMENTS, INC. SOUTH HACKENSACK, N.J. U.S.A.

FARINO-PLASTO-CHART

FIG. 2

California Wheat Commission

Firm TRIGEN

Sample I.D. 22637 *Date* 3-18-03

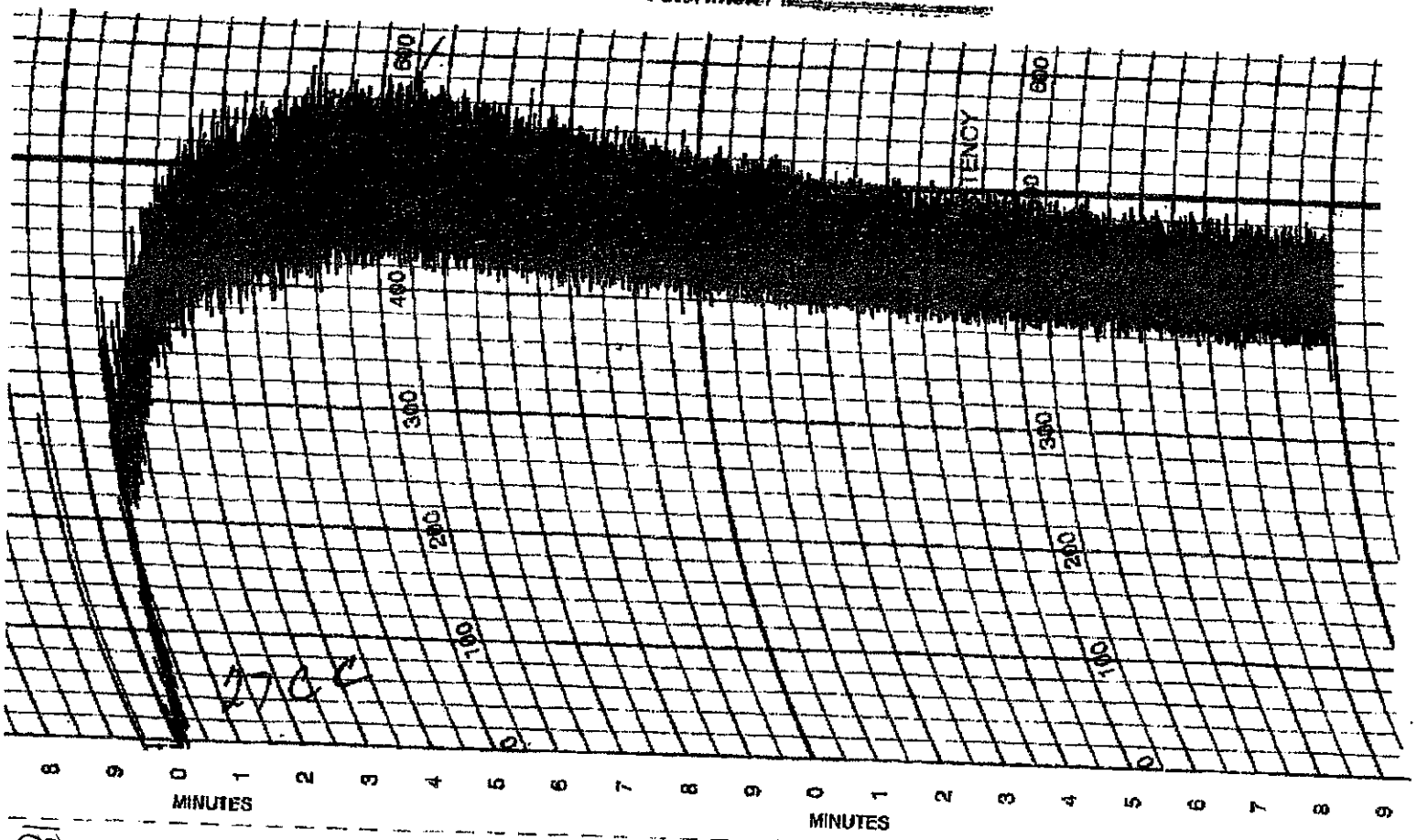
Absorption % 54 *Arrival (min)* 1.75

Mixing Peak (min) 5.5 *Departure (min)* 13.25

P.T.I. (B.U.) 60 *M.T. (min)* 11.5

...D. (B.U.) 70 *Valorimeter* _____

= B1021/HJ98-1M.
FOXHOME, MN, 2002



22637

TABLE 2. MILLING + BAKING DATA

20050021

California Wheat Commission

Wheat Quality Report

B021/HS98-1M FOXHOME 2002, V-20

Laboratory No.	02-2837	Date	March 19 2003
Submitted No.	Trigen	Name	Mr. Robert W Ronig
Type	Hared wheat	Company	Trigen Seed LLC

1. Wheat Analysis:

Moisture %	9.99
Protein-Combustion Nitrogen	14.43
Ash %	1.92
Test weight (lb/bu) (kg/hl)	61.6
Hardness(SKCS)	72
1000 Kernel Wt.	27.4

3a. Experimental Milling

Flour Yield %	74.2
Bran Yield%	

3b. Whole Wheat Flour Milling

Flour Yield %	

5. Regular Bread Test

Volume c.c.	1020
Sp. Volume c.c/g	7.45
Grain & Texture	S
Score(1-10)	10
Appearance(Symmetry)(1-10)	10

7. Kernel Size or Flour Particle Dist. (20g)

	Grams	%
7W	68.7	
10W	31.2	
12W	0.1	
Pan		

2. Flour Analysis:

Moisture %	13.68
Protein % (as is Mc basis)	12.9
Ash %	0.47
Falling Number (Sec)	346
Dry Gluten %	
Wet Gluten % (14%MB)	33.7
Gluten Quality Index %	99

4. Farinographic

Absorption %	54
Arrival (min)	1.75
Peak (min)	5.5
Departure (Min)	13.25
M.T. (Min)	11.5
MTI (BU)	60
TMD (BU)	70

6.Alveograph

P	45.1
L	163
P/L	0.28
W	243.9

*** 8. Bread Crumb Score**

Open 10-Close & Irregular 1	7
Uniformity 10-Irregular 1	8
Moist 10-Dry 1	3
Shine 10-Dull 1	8
Bread crumb "b" value	8.26
10. Dough Length after moulding	73
11.Gluten toughness 10-1 Soft & weak	5

9.Comments

Strong and extremely mellowing gluten flour, excellent gluten quality for bread baking and blending, this flour gluten slightly more strong than OXEN but flour absorption 4% lower than OXEN, similiar or better than OXEN .

Excellent = E
Satisfactory = S
Satisfatory - Questionable = S-Q
Questionable =Q
Unsatisfactory = U

Signature: Dem-Shun Huang

Dem-Shun Huang Laboratory Director

Table 4. Seedling Reaction to Stem Rust at North Dakota State University in 2002.

	Reaction to Pathotypes					
HPHJ	**MCCF**	**RHTS**	**RTQQ**	**QCCJ**	**QTHJ**	**TPMK**
MR	R	R	R	VR	R	R

'Banton' is moderately susceptible to Fusarium head blight (Table 5).

Table 5. Reaction to Fusarium Head Blight at Crookston, Minnesota in 2002.

	Incidence%	Severity %	Disease %	VSK %	DON ppm
'Banton'	87.5	23.7	20.9	6.0	4.1
'Wheaton'	100.0	57.9	57.9	27.5	10.1

Insect Resistance

'Banton' has not been tested against Hessian fly, greenbug, grasshoppers, English grain aphid, chinch bug, army worm, cereal leaf beetle or Russian wheat aphid.

REPRODUCE LOCALLY. Include form number and edition date on all reproductions. FORM APPROVED - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued *(7 U.S.C. 2421)*. The information is held confidential until the certificate is issued *(7 U.S.C. 2426)*.

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Trigen Seed LLC	O1 M96	Banton
4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP, and Country)* 8024 Telegraph Road Bloomington, MN 55438 1178	**5. TELEPHONE** *(Include area code)* 952 829 7740	**6. FAX** *(Include area code)* 952 829 8020
	7. PVPO NUMBER 200500021	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.** [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.** [X] YES [ ] NO

10. Is the applicant the original owner? [X] YES [ ] NO **If no, please answer one of the following:**

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?
[ ] YES [ ] NO **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?
[ ] YES [ ] NO **If no, give name of country**

11. Additional explanation on ownership *(Trace ownership from original breeder to current owner. Use the reverse for extra space if needed)*:

Banton is derived from a cross of 'Buch Antorcha'/HF98 made in the Trigen Seed crossing block at Pirque, Chile in 1995. Progeny from the cross, selections, trials and seed production were all performed in Trigen Seed LLC nurseries in the U.S.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.